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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,819	07/09/2001	Jean St-Pierre	12221US02	3740

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EXAMINER

CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 07/15/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/763,819

Applicant(s)

ST-PIERRE ET AL.

Examiner

Jonathan S. Crepeau

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Peri d f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disp sition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 12-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachme nt(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-11, drawn to a cooling subsystem that can be used in a fuel cell, classified in class 429, subclass 26.
 - II. Claims 12-34, drawn to a fuel cell system and method of providing antifreeze and corrosion protection for a fuel cell system, classified in class 429, subclass 13.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the subcombination requires an ion exchange unit. The subcombination has separate utility such as in an engine.
3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Michael Harlin on May 30, 2003, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-34

withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Priority

6. No claim has yet been made in this application for foreign priority under 35 USC 119 (a)-(d). However, receipt is acknowledged of a copy of the German application number 19843401.4. If Applicant wishes to make a claim for priority, attention is directed to 37 CFR 1.55(a). If such a claim is made, a new oath or declaration will be required which makes reference to the German priority application.

Specification

7. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 10 and 11 provide for the use of the cooling subsystem of claim 1, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 10 and 11 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-6, 8, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Shubert et al (U.S. Patent 5,174,902). Regarding claim 1, the reference is directed to a cooling subsystem for an engine including a coolant and a circulation loop (see abstract; Figure 23). The circulation loop comprises an ion exchange unit (110; see col. 17, line 10). Regarding claims 1, 2 and 8,

after purification, the coolant consists of a mixture of water and ethylene glycol (see col. 17, lines 48-58). Regarding claims 3, 4, and 5, the ion exchange unit comprises an alkaline anion resin and an acidic cation resin (see col. 17, lines 10-15; col. 21, line 54, et seq.). Regarding claim 6, the temperature of the coolant mixture in the circulation loop is 120 °F (49 °C) or lower (see col. 14, line 2). Regarding claim 1, the reference teaches in column 8, line 65, et seq. that a measured coolant conductivity of less than 50 micromhos (50 μ S) indicates an acceptable purification. This is considered to be anticipatory of the range in claim 1 of “less than about 50 μ S/cm” since one centimeter of the coolant of the reference would inherently have a conductivity of less than 50 μ S. This disclosure is also considered to be anticipatory of the range of “less than 5 μ S/cm” recited in claim 9, because the reference, in disclosing the broader range of less than 50 μ S, discloses the narrower range of less than 5 μ S with sufficient specificity. See MPEP §2131.03.

Thus, the instant claims are anticipated.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shubert et al. in view of Delport (U.S. Patent 5,681,456).

Shubert et al. is applied to claims 1-6, 8, and 9 for the reasons stated above. However, the reference does not expressly teach that the coolant comprises about 50% water and 50% glycol solvent by volume.

The patent of Delport is directed to a fluid handling system for an automotive engine coolant (see abstract). As disclosed in the abstract, the coolant comprises 50% antifreeze and 50% water.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Delport would motivate the artisan to use a 50/50 water/glycol mixture in the system of Shubert et al. In column 7, line 4, Delport describes a 50/50 ratio as "preferred," and in column 7, line 21, further describes the ratio as "desired." Accordingly, the artisan would be sufficiently motivated to use this ratio in the coolant composition of Shubert et al.

14. Claims 1, 2, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 9-22716 in view of Fredley et al (U.S. Patent 5,565,279).

Regarding claims 1 and 10, JP '716 is directed to a water-cooled fuel cell comprising a water circulation loop (see abstract; Figure 1). The fuel cell is a phosphoric acid fuel cell (see paragraph 14 of the machine translation). Regarding claim 1, the circulation loop comprises an ion exchange unit (6; see paragraph 4). Regarding claims 1 and 9, the reference teaches in

paragraph 15 that the coolant conductivity is set to 0.1 $\mu\text{S}/\text{cm}$ after passing through the ion exchange unit.

JP '716 does not expressly teach that the coolant consists of a mixture of water and a glycol solvent, as recited in claims 1 and 2.

Fredley et al. is directed to a coolant system for a phosphoric acid fuel cell (see col. 2, lines 21-25). In column 2, line 20, the reference teaches that the coolant is a water-glycol mixture.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of Fredley et al. to use a water-glycol mixture as the coolant of JP '716. In column 2, lines 17-21, Fredley et al. teach that "[t]he cooling system of this invention utilizes a predetermined amount of a preferably water-based coolant, such as water or a water-glycol mixture, which is recirculated thorough an essentially closed loop." Accordingly, as Fredley et al. indicate that such a water-glycol coolant is "preferable," the artisan would thereby be motivated to use this coolant composition in the fuel cell system of JP '716.

15. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 9-22716 in view of Fredley et al as applied to claims 1, 2, 9, and 10 above, and further in view of Bromberg et al (U.S. Patent 5,409,784).

JP 9-22716 does not expressly teach that its system is used in a vehicle.

In column 6, lines 45-52, Bromberg et al. teach that “[f]uel cells well suited to vehicular activities are the alkaline fuel cell (AFC), the phosphoric acid fuel cell (PAFC), the proton exchange membrane fuel cell (PEMFC), the solid oxide fuel cell (SOFC) and the alkaline fuel cell (AFC), all using hydrogen fuel provided by an external reformer or by a storage tank.”

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of Bromberg et al. to use the phosphoric acid fuel cell of JP ‘716 in a vehicle. As noted in the above teaching, these fuel cells are “well-suited” to such an application. Accordingly, the artisan would be motivated to use the phosphoric acid fuel cell of JP ‘716 in a vehicle.

Conclusion

16. The following notes are made with respect to the references cited in the International Search Report which bear an “X” label:

Miller, Jr. (U.S. Patent 4,946,595) and JP 7-310070 do not anticipate the claims because they do not teach at least the feature of the coolant conductivity being less than 50 $\mu\text{S}/\text{cm}$.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

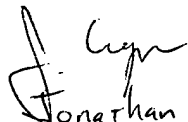
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (703) 308-4333. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 305-5408 or (703) 305-5433.

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

July 10, 2003


Jonathan Crepeau
Patent Examiner
Art Unit 1746